Appln. No. 10/065,486
Docket No. 124695 / GEM-0058

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1.   (currently amended)   A method for registering images relating to a patient acquired using an imaging system, the imaging system having an overall detector coverage in an axial direction, the axial direction being defined by the direction of motion of a movable table for receiving the patient thereon, the method comprising:

determining a target area of interest;

obtaining scout image data responsive to said target area;

processing said target area by subdividing said target area in the axial direction into multiples of an increment of the overall detector coverage in the axial direction so as to create a plurality of sub-target areas of interest;

computing a desired image acquisition time having a duration greater than the duration of one breathing cycle of the patient;

operating said imaging system to create image data responsive to each said sub-target area;

~~combining said image data for each of said sub-target areas to create a set of image data;~~

processing said image data to determine a phase of said image data; [[and]]

synchronizing said image data[[.]]; and

combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest.

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2.   (Original) The method of Claim 1 wherein said sub-target area corresponds to a size of a detector in a selected axis.

3.   (Original) The method of Claim 1 wherein said target area of interest corresponds to a size of a target.

4.   (Cancelled)

5.   (Original) The method of Claim 1 further comprising said operating includes establishing an acquisition time for said image data corresponding to a physiological cycle plus at least one of two thirds of a gantry rotation time and one gantry rotation time.

6.   (Original) The method of Claim 1, wherein said target area of interest is associated with an object to be imaged.

7.   (Original) The method of Claim 1 wherein said synchronizing includes utilizing said phase to correlate image data.

8.   (Original) The method of Claim 1 further comprising synchronizing PET emission data utilizing said phase.

9.   (Currently Amended) A system for registering images relating to a patient using retrospective gating, the system comprising:

an imaging system adapted to have the patient disposed <u>upon a movable table</u> for imaging by said imaging system, the imaging system having an overall detector coverage in an axial direction <u>defined by the direction of motion of the table,</u> wherein said imaging system generates image data responsive to the patient; and

a processing device, wherein said processing device is configured to execute the following steps:

determining a target area of interest;

obtaining scout image data responsive to said target area;

processing said target area by subdividing said target area in the axial direction into multiples of an increment of the overall detector coverage in the axial direction so as to create a plurality of sub-target areas of interest;

computing a desired image acquisition time having a duration greater than the duration of one breathing cycle of the patient;

operating the imaging system so as to create image data responsive to each said sub-target area;

~~combining said image data for each of said sub-target areas to create a set of image data;~~

processing said image data to determine a phase of said image data; [[and]]

synchronizing said image data[[.]]<u>; and</u>

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combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest.

10.   (Original) The system of Claim 9 wherein said sub-target area corresponds to a size of a detector in a selected axis.

11.   (Original) The system of Claim 9 wherein said target area of interest corresponds to a size of a target.

12.   (Cancelled)

13.   (Original) The method of Claim 9, wherein said target area of interest is associated with an object to be imaged.

14.   (Original) The method of Claim 9 wherein said synchronizing includes utilizing said phase to correlate image data.

15.   (Currently amended)   A storage medium encoded with a machine-
readable computer program code for registering images relating to a patient, the images
acquired using an imaging system with respiratory gating, the imaging system having an
overall detector coverage in an axial direction, the axial direction being defined by the
direction of motion of a movable table for receiving the patient thereon, said medium
including instructions for causing a controller to implement a method comprising:

determining a target area of interest;

obtaining scout image data responsive to said target area;

processing said target area by subdividing said target area in the axial direction
into multiples of an increment of the overall detector coverage in the axial direction so as
to create a plurality of sub-target areas of interest;

computing a desired image acquisition time having a duration greater than the
duration of one breathing cycle of the patient;

operating the imaging system to create image data responsive to each of said sub-
target areas;

~~combining said image data for each of said sub-target areas so as to create a set of
image data;~~

processing said image data to determine a phase of said image data; [[and]]

synchronizing said image data[[.]]; and

combining said synchronized image data for each of said sub-target areas to create
a set of image data of the target area of interest.

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16.　　(Original) The storage medium of Claim 15 further comprising computer program code wherein said operating includes establishing an acquisition time for said image data corresponding to a physiological cycle plus at least one of two thirds of a gantry rotation time and one gantry rotation time.

17.　　(Original) The storage medium of Claim 15 further comprising computer program code wherein said method further includes:

synchronizing PET emission data utilizing said phase.

18-20. (Canceled)

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21.   (Currently Amended) A system for registering images relating to a patient using retrospective gating, the system having an overall detector coverage in an axial direction, the axial direction being defined by the direction of motion of a movable table for receiving the patient thereon, the system comprising:

means for determining a target area of interest;

means for obtaining scout image data responsive to said target area;

means for processing said target area by subdividing said target area in the axial direction into multiples of an increment of the overall detector coverage in the axial direction so as to create a plurality of sub-target areas of interest;

means for computing a desired image acquisition time having a duration greater than the duration of one breathing cycle of the patient;

means for operating said imaging system to create image data responsive to each said sub-target area;

~~means for combining said image data for each of said sub-target areas to create a set of image data;~~

means for processing said image data to determine a phase of said image data; [[and]]

means for synchronizing said image data[[.]]; and

means for combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest.

22.   (Original) The system of Claim 21 further comprising said means for operating including means for establishing an acquisition time for said image data corresponding to a physiological cycle plus at least one of two thirds of a gantry rotation time and one gantry rotation time.

23.   (Original) The system of Claim 21 further comprising:

means for synchronizing PET emission data utilizing said phase.

24.   (Currently Amended) A method for assigning phases in images acquired using an imaging system comprising an overall detector coverage in an axial direction <u>defined by the direction of motion of a moveable table upon which an object to be imaged is disposed</u>, the method comprising:

operating said imaging system to create image data of [[an]] <u>the</u> object and generate system data, wherein said image data comprises a plurality of sub-target areas of interest that are multiples of an increment of the overall detector coverage in the axial direction, wherein said system data includes object physiological information and imaging system information corresponding to each respiratory cycle;

processing said image data and said system data to determine a phase of said image data; and

synchronizing said image data.

25.   (Previously presented) The method of Claim 24 further including:

determining a reference point in said system data;

establishing said reference point as a zero phase pulse;

assigning a phase of zero to an ith reference point of said system data and assigning a phase of 2 pi for a subsequent reference point; and

wherein said synchronizing includes selecting images with correlating phases.

26.   (Original) The method of Claim 24 wherein said system data includes physiological data.

27.   (Original) The method of Claim 26 wherein said physiological data includes respiratory cycle data.

28.   (Original) The method of Claim 25 further including applying a wrap around technique to adjust said phase if said reference point occurs while said imaging system is not imaging.

29.   (Previously presented) The method of Claim 1 wherein each increment of the multiples of an increment are equally dimensioned.

30.   (New) The method of Claim 1 wherein the target area of interest has an axial dimension greater than the overall detector coverage in the axial direction.

31.   (New) The method of Claim 1 wherein:

said operating comprises operating said imaging system at multiple acquisition locations that correspond to each sub-target area to create image data comprising more than one phase of one breathing cycle of the patient; and

said combining comprises combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest at one determined phase.